UNITED
NATIONS

A

General Assembly

Distr.
GENERAL

A/49/414
21 September 1994

ORIGINAL: ENGLISH

Forty-ninth session
Item 92 (e) of the provisional agenda*

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: GLOBAL CONFERENCE ON THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly for its consideration, as an annex to the present note, the study undertaken by the United Nations Development Programme (UNDP) on the feasibility of developing SIDS/NET, an information network for small island developing States. This study was requested in paragraph 105 of the Programme of Action for the Sustainable Development of Small Island Developing States, 1/ which was agreed upon at the Global Conference on the Sustainable Development of Small Island Developing States (SIDS) 2/ held in Bridgetown, Barbados from 25 April to 6 May 1994.

Notes

1/ A/CONF.167/9, resolution 1, annex II.

2/ A/CONF.167/9.

* A/49/150.

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ANNEX

SIDS/NET: small island developing States network

FEASIBILITY STUDY REPORT

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ACRONYMS

AOSIS	Alliance of Small Island States
APC	Association for Progressive Communications
ASEAN	Association of South-East Asian Nations
BBS	bulletin board systems
CANA	Canadian News Agency
CD-ROM	compact-disk read only memory
CGIAR	Consultative Group for International Agricultural Research
EPA	Environmental Protection Agency (USA)
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
GEOS	Global Earth Observation Systems
GEMS	Global Environment Monitoring System
GRID	Global Resources Information Database
IARC	international agricultural research centres
IMO	International Maritime Organization
INRES	Information Referral System for Technical Cooperation among Developing Countries
ISOC	Internet Society
IUCN	IUCN - The World Conservation Union
NGO	non-governmental organization
PTT	Posts Telephone and Telecommunications Authority
SAARC	South Asian Association for Regional Cooperation
SDNP	Sustainable Development Networking Programme
SIDS	Small Island Developing States
SIDS/NET	Small Island Developing States Information Network
SIDS/TAP	Small Island Developing States Technical Assistance Programme
SPC	South Pacific Commission
TCDC	Technical Cooperation among Developing Countries
TCP/IP	Transmission Control Protocol/Internet Protocol
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WAN	wide area networks
WCMC	World Conservation Monitoring Centre
WMO	World Meteorological Organization
WTO	World Tourism Organization
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

1. Agenda 21 a/ and the Barbados Programme of Action b/ identified the need for information to facilitate sustainable human development. The Barbados Programme requested the United Nations Development Programme (UNDP) to undertake a study of the feasibility of developing SIDS/NET, an information-sharing network for small island developing States (SIDS), in time for the forty-ninth session of the General Assembly of the United Nations.

2. UNDP engaged a team of consultants which visited all SIDS regions and 17 SIDS. Many international organizations were also consulted. The team strongly endorses SIDS/NET as an agent of change to promote sustainable human development and global integration, using new and appropriate technologies to enhance human interaction and understanding.

3. SIDS/NET proposes linking SIDS using computer mediated communications technologies now in use around the world. The present report recommends and outlines, in a detailed plan of action and budget, a phased approach for implementing a flexible solution to give SIDS full access to global computer networking as a tool to help them integrate within the world economy. In the present report, the SIDS/NET study team strongly recommends that the SIDS/NET concept be considered favourably not only by the small island developing States (SIDS) members and the Alliance of Small Island States (AOSIS), but also by the international donor community and the General Assembly of the United Nations.

4. SIDS/NET is based on catalytic donor funding, on cost sharing and cost recovery. It depends on user participation as a principle of implementation and as a principle of operation. It relies on entrepreneurship. It will require capacity building to enhance the ability of SIDS to benefit from these computer communication technologies that will help overcome their relative isolation. SIDS/NET builds on existing infrastructure and looks for opportunities for synergistic interactions with other activities. The experience of the Sustainable Development Networking Programme (SDNP) of UNDP provides a solid basis in experience for proposing SIDS/NET. SIDS/NET and SDNP should be integrated where feasible.

5. To the extent possible, this programme will encourage technical cooperation among developing countries (TCDC) as a means of implementing SIDS/NET. SIDS/NET will also promote and demonstrate the benefits of increasing connectivity with the global community and other SIDS. Integration with existing programmes for TCDC, such as the Small Islands Developing States Technical Assistance Programme (SIDS/TAP), and with other networking activities will be necessary. Training in the use of these technologies and in the management practices associated with these will be an important activity.

6. The team proposes management decentralized to individual SIDS based on local user groups and a small steering committee to provide guidance and ensure stakeholders are represented. It is proposed that subscriber fees be introduced immediately to build in the elements of cost recovery from the beginning. Regional and global coordination and the eventual creation of a SIDS/NET coordination body at the international level are recommended. The project to

launch SIDS/NET spans five years, with each country being funded directly for four of those years. Total proposed donor funding is of the order of US$ 20 million. The SIDS contribution is about US$ 10 million. Decreasing levels of donor funding are stipulated. By year five, the contribution from SIDS, including user subscriptions, will only partially cover operating costs. Voluntary contributions will be needed to meet costs on an ongoing basis in some SIDS.

I. INTRODUCTION

1. Information was identified as a cross-cutting issue in an earlier and global plan of action, Agenda 21, a/ agreed to on the occasion of the United Nations Conference on Environment and Development (UNCED) at the Earth summit that took place in June 1992 in Rio de Janeiro. Chapter 40 of Agenda 21, entitled "Information for decision making", states that "In sustainable development, everyone is a user and provider of information" and it was recognized that "the need for information arises at all levels".

2. SIDS themselves acknowledge, in the Barbados Programme of Action agreed upon as a result of the Global Conference on the Sustainable Development of Small Island Developing States, that information is important, especially under the circumstances that contribute to their unique situation in the world community.

3. The Barbados Conference agreed on the following paragraphs:

> 103. "The use of the existing, as well as the establishment of, collaborative networks of subregional and regional research and information systems, in particular mechanisms to facilitate access by small island developing States to information, should be supported."
>
> 105. "The United Nations Development Programme (UNDP) should be invited to coordinate a feasibility study in collaboration with the small island developing States and relevant subregional organizations for the implementation of a small island developing States information network (SIDS/NET). Such a study should be completed before the commencement of the forty-ninth session of the United Nations General Assembly."

4. The Programme of Action stressed the need for networking for informed decision-making, for increased sharing of data and information, for facilitating the exchange of experiences and for increased collaboration in order to overcome the problems of size and isolation of SIDS.

5. In the information age, new technologies are appearing that are making communication very cost-effective, even at long distances. After aviation, computer communications is probably the next technological revolution that is imminent for small island developing States. This revolution will join people around the world in a network many times more convenient to use than fax as it is known today.

6. Countries that participate will more readily integrate into the global economy. Optical fibre systems will act as important communication bridges linking SIDS to the rest of the world. Where a fibre cable is not justified by volume of traffic, satellite communication will fill the gap. Citizens of SIDS would deal with the rest of the world as comfortably as anyone else. Choice of communication technologies and modes of communication will be essential for many SIDS to reduce the punitive tariffs they bear today, more than US$ 1 per page of fax sent abroad and up to US$ 4 to US$ 5 a page in at least one SIDS.

7. A companion activity, SIDS/TAP, will promote interregional and intraregional cooperation on sustainable development, and UNDP is also coordinating a SIDS/TAP feasibility study in collaboration with small island developing States and relevant subregional organizations. c/

8. One of the most obvious areas for collaboration and information exchange through SIDS/NET will be in technical cooperation. Considerable knowledge, expertise and capabilities are available in SIDS. This study has shown that this information is either not known by other SIDS or not readily available. SIDS are at different levels of development and need to be able to be exposed to a wide range of expertise and knowledge, which could be of benefit to other SIDS.

9. For SIDS/NET to succeed, it must be seen as an agent for change that will help bring about the communication, coordination and collaboration essential in an increasingly complex, populated, resource limited and interconnected world.

10. At no other time has the need to know been greater. Global economic integration, negotiation of major agreements, such as the recent General Agreement on Tariffs and Trade (GATT) accords and the creation of the World Trade Organization, the United Nations Conference on Environment and Development (UNCED) and various other United Nations and other international conferences and conventions that have evolved as a result, the need to have data, news, advice, intelligence and more human interaction on a whole range of issues influencing the competitiveness of nations and the well-being of people are the real reasons for looking to appropriate and contemporary technologies, management practices and communications vehicles. SIDS/NET is one alternative to facilitate a global transition in the twenty-first century and to ensure that SIDS are part of it.

11. This present report records the results of the SIDS/NET feasibility study that was undertaken by UNDP. UNDP recommends the implementation of SIDS/NET according to the principles and recommendations of the present report.

II. OBJECTIVES AND SCOPE

12. The objectives of SIDS/NET are to:

(a) Help ensure that decision-making in the interest of national development in SIDS is as well informed and as multisectoral as possible;

(b) Assist and catalyse development collaboration among different sectors of society and the economy around the world and among SIDS by using technologies appropriate and affordable to network people, enhance human interaction and make knowledge resources such as databases, existing networks and computerized information services more readily available;

(c) Help SIDS share information, expertise, experiences and other resources;

(d) Help SIDS develop the capacity to make beneficial use of networking and the resources available as a result;

(c) Facilitate access to relevant information in local, regional and global databases, networks and other global resources.

13. SIDS/NET deals with information of interest not only to sustainable development, but to development in the broad sense. It is not the intention of SIDS/NET to compete with the telecommunications providers in the private sector in meeting the needs of primarily commercial applications and primarily personal mail communications. Nor is SIDS/NET meant to be a profit-making enterprise. On the other hand, it is not limited to research and academic issues. Development questions affecting all sectors are to be addressed. Non-governmental organizations (NGOs) and other stakeholders in sustainable human development are to be supported.

14. The proposed time span for the funding of SIDS/NET is five years. Each country will be funded for only the first four years. Twenty-two countries would be funded starting in year one, the others starting in year two.

III. METHODOLOGY

15. To undertake this study and prepare this report, UNDP assembled a team of consultants in early June 1994. Terms of reference for the feasibility study were developed. The intention was to visit as many countries as possible or to consult with country representatives, and to use local or regionally available consultants.

16. The written reports of the consultants are on file at UNDP along with supporting documentation on current networking activities in or relevant to SIDS, some information resources relevant to SIDS, technical options for SIDS/NET, equipment considerations for SIDS/NET, a glossary of terms, and other material of relevance, including a full list of the over 100 people met or consulted. One consultant coordinated the study. Another visited international organizations from around the world. Representatives of the Alliance of Small Island States (AOSIS) were consulted and their valuable feedback obtained.

17. In total, 17 island States were visited by consultants from India for the Indian Ocean, the Caribbean, the South Pacific, Angola for the Portuguese-speaking islands of the Atlantic Ocean and from Tunisia for the islands of the Mediterranean and the Persian Gulf. The countries visited by the regionally based consultants were: Barbados, Trinidad and Tobago, Jamaica, Guyana, St. Vincent and the Grenadines, St. Lucia, St Thomas, Maldives, Mauritius and Seychelles, Sao Tome and Principe, Cape Verde, Cyprus, Malta, Bahrain, Fiji and Western Samoa. Contacts and interviews were also conducted with representatives of other island States on the occasion of several international forums. These countries included Nauru, Niue and Vanuatu.

18. The advice of many international agencies was sought and some key resources, including databases and other information resources they may be able to contribute, were identified.

19. Extensive use of electronic mail and of the very networking infrastructure described and recommended here was used to coordinate, communicate and to obtain

timely reports from all the regions visited. A LISTSERV, an automatic mailing list programme available on the Internet, the largest openly accessible global computer network, was used. All background material and reports were shared this way.

20. Discussions with the UNDP SIDS/TAP team also took place. An integral component of SIDS/TAP should be the compilation of a directory of institutions and scholars with recognized expertise in the sustainable development of SIDS. There is a symbiotic relationship between SIDS/NET and SIDS/TAP and ways of integrating both activities need to be pursued.

21. The chief of the Communications and Computer Services Section at UNDP provided valuable insight and advice concerning United Nations system-wide plans for global networking. It appears that the United Nations system will equip itself with a modern computer communication network consisting of leased lines and packet switching equipment to promote communication between its major office complexes in the world. SIDS/NET should remain aware of this effort and recognize that it may be one complementary mechanism for networking SIDS and helping them access information in the public domain that is available through United Nations agencies, for example. However, SIDS/NET will go beyond this application, and give the SIDS universal access to all open networks of the world. While SIDS should seek to build on and seek partnerships with existing and new networking initiatives, SIDS/NET is not to be tied to or limited by these or any other networks, whether of the United Nations or not.

22. On 16 August 1994, members of the SIDS/NET study team and of UNDP met with members of the AOSIS group at UNDP headquarters in New York and with members of the SIDS/TAP group at UNDP to present their findings and to obtain feedback. It was agreed that a copy of the draft report would be distributed to AOSIS members on 22 August for comment. A final document would then be sent at the beginning of September to the United Nations Secretariat for preparation for the General Assembly.

IV. WHAT IS SIDS/NET?

23. SIDS/NET is a programme that will enhance the capacity of SIDS to take decisions that are as informed as possible, to collaborate, to share information and to access local, regional and global resources.

24. SIDS/NET will promote human interaction. Building human networking through SIDS/NET is the first priority. Building and managing and financing SIDS/NET so that it is sustainable in the long term is a precondition for success. This will be done by people in SIDS working in collaboration and interacting using appropriate computer communications technologies and appropriate telecommunications systems. These may be based on either the local, regional or international telephone system or, better still, on a network of dedicated, robust, cost-effective and reliable telecommunications channels to link people and organizations in SIDS and beyond.

25. One output of this project will be a network to help stakeholders in development in SIDS, and especially those concerned with sustainable human

development, acquire the capacity to use appropriate technologies to bridge the communications gap. SIDS/NET will also help users in SIDS share and use information on a variety of issues related to their sustainable development. SIDS/NET will help forge closer collaboration.

26. SIDS/NET could be a valuable source of information for organizations and individuals concerned about the comparative development and the competitive advantages of countries in the regional or global economy. The project will also help SIDS understand what information is available locally, nationally, regionally or globally and how it can be obtained. More than anything else, it will help colleagues around the world communicate to promote the interests of SIDS.

27. The SIDS/NET concept proposed here is absolutely not a passive one. The benefits of closer collaboration and timely communication using these technologies need to be aggressively publicized. They are critical tools for development. Local and regional groups and a global user group will need to be created and coordinated. Securing the agreement of key players in sustainable development at all these levels will be crucial. Marketing and communication, training for capacity building and national, regional and global integration will be essential for SIDS/NET to be a real success.

28. SIDS/NET builds on the experience of another networking activity of UNDP, SDNP. The lessons learned from SDNP can be applied to SIDS/NET, including the need to ensure local involvement and ownership, a cross sectoral approach and participatory management based on a small secretariat supported by a small steering committee made up of key stakeholders for sustainable development.

A. SIDS/NET components

29. The SIDS/NET concept includes four elements:

(a) Knowledge of the needs and circumstances of SIDS/NET users and of the nature and structure of the information resources to meet these needs: databases, networks, information centres, people and organizations as well as knowledge of how to effectively exploit these to meet users' needs under given circumstances.

(b) Network coordination and management.

(c) Appropriate technologies for computer networking to link users and providers of information.

(d) Capacity building.

1. Information resources

30. People and organizations are sources and gatekeepers of the information capital on which sustainable development depends. They need to be persuaded to organize the information and to make it publicly accessible using SIDS/NET.

National, regional and global entities, such as regional organizations in SIDS, organizations of the United Nations, the international research and academic community, multinationals and others are some of the key providers of this information. These resources include libraries and information centres, news, reports and other documentation, whether textual, audio-visual, data sets or imagery, and/or computerized information resources.

31. In many cases, these resources are not available outside the organization. But there is a significant and ever-increasing amount of information that is being made available in the public domain as a matter of policy by organizations using computer networks and conferencing systems, especially the Internet and/or local bulletin board systems (BBS). The Internet is the most recognizable, open and increasingly ubiquitous computer network and many other networks and BBSs are linked to it (there are over 30,000 BBSs in the United States of America). Information can be posted on the Internet using many freely available computer programmes designed for this purpose. Gopher, World Wide Web or WWW, mailing lists and others, are cost-effective tools for broadcasting a message to and securing feedback from an ever-increasing number of users and providers of information around the corner and around the world. By placing information on the Internet in this way, it is in the public domain. For SIDS without access to or experience using the Internet, establishing a local BBS is a logical first step to test the water and develop expertise without great cost. The e-mail connectivity or low end option recommended initially for some SIDS (see below) would allow this. Local BBSs could be used by government agencies, NGOs and educational, scientific and research organizations, for the private sector and for local authorities for posting information and gathering feedback. SIDS/NET may provide funding for a national node, but this node could spawn a host of BBSs linked to it and through SIDS/NET, and linked to other SIDS and/or to the world at large.

32. Thus more and more publicly available information is appearing on computer networks. In some cases, people themselves are also available for consultation publicly, or through professional and business networks, associates, friends, family or "buddy" networks. SIDS need to be aware of these and to contribute at the local, regional and global levels as well, or they will be overlooked and disadvantaged.

33. Directories and information referral systems are key resources. One of these is the Information Referral System for Technical Cooperation among Developing Countries (INRES) of the Technical Cooperation among Developing Countries (TCDC) unit of UNDP. INRES is an inventory of institutions with expertise in sustainable development in developing countries and therefore could be readily adapted to accommodate the needs of SIDS/TAP.

34. Commercial information service providers are available using a variety of access methods, including the Internet. CompuServe and Dialog alone are large and well-established information services providers that offer access to over 550 databases on various subjects. These resources are available at a price. They are private. Companies, especially multinationals, use them to plan, strategize and compete. Decisions are taken on the basis of the best information money can buy and much of this comes from these databases and the leads they open.

35. SIDS/NET could help users in SIDS obtain local access to some of these on-line databases. If users cannot query them on-line, then they can do so using the versions published on CD-ROM. d/ Local, national and regional libraries and information centres provide access to these and other computerized information resources they acquire. These CD-ROM databases could be available to users on SIDS/NET. SIDS need these resources for informed decision-making, for negotiation and in trade and commercial transactions, for example, so they can level the playing field and secure the greatest advantage possible when dealing with counterparts that historically have been much better informed. This comes at a cost, but if questions of accuracy and value are critical, and in matters related to commercial transactions and competitive advantage, the question becomes how much are organizations willing to pay to get the best information possible.

36. Electronic conferences e/ are another important information resource. In an electronic conference, the user group agrees to create files on computers or hosts that are networked and which they can visit by virtue of their membership. These files can be many and can, by agreement, contain subject-specific information grouped under the headings relevant to the users. These conferences are very useful for posting "news" or other information of interest to the groups that moderate and visit the conference. Electronic conferencing was used extensively throughout the United Nations Conference on Environment and Development (UNCED) process and continues to be used as a way of disseminating official documentation and also as a way of securing outside input to the process and to its follow-up. Individuals and organizations unable to come to the meetings could communicate their views with decision makers and others. BBSs are a variant of electronic conferencing (and vice versa).

37. For SIDS, there are several international or globally available electronic conferences available. Many more on general topics such as environmental law, the environment in general, news from or about key international organizations, individuals and events, are also available. f/

38. The largest globally and publicly available network is the Internet. The Internet Society (ISOC), in a press release dated 4 August 1994, states that there are over 3.2 million computers or hosts connected to the Internet, an increase of over 81 per cent over the number in 1993. One million new hosts were added in the first six months of 1994. It is also known that there are about 6,000 electronic conferences or newsgroups (UseNet news) on the Internet, and a growing number of these are relevant to the interests of SIDS. Increasingly, UseNet newsgroups are reflecting an international outlook.

39. The Association for Progressive Communications (APC) is a world-wide partnership of member networks providing low-cost and advanced computer mediated communications to improve networking and information sharing among organizations and individuals working for environmental sustainability, social and economic justice, universal human rights and peace. APC is a private network that maintains over 600 electronic conferences, many of which are relevant to sustainable development. Users must pay a fee to subscribe to this network, which is accessible through the Internet. The global FidoNet network also exchanges electronic conferences and these may be in the public domain.

40. Initially, e-mail and a few globally available electronic conferences and appropriate BBS or FidoNet software could be made available under conditions of low-level connectivity present in some countries. An unlimited number of electronic conferences can be developed locally and made available to local user groups on this basis. These can be established using software that is freely available in the public domain. Locally developed resources are likely to be very important and relevant to local users and should be a priority of SIDS/NET.

41. Many of these networks exist already, some in SIDS: PacTok in the South Pacific is an example. The GreenNet APC network node located in the United Kingdom of Great Britain and Northern Ireland provides store and forward Internet compatible e-mail and electronic conferencing to many users in Africa and around the world. Users in many developing countries still use costly international direct distance dialling to Internet service providers in the United States or Europe. These services form the basis of the local and national networks that are connected globally. Costs are low enough to permit international networking for NGOs in an increasing number of countries in Latin America, Africa south of the Sahara and Asia.

42. For SIDS, these may be useful resources to remain in touch with and to contribute to. They are useful ways to overcome distance and other limitations that may prevent SIDS from fully integrating within the global economy and global society.

43. Global computer networks, such as the Internet, are open, and anyone can join in. Proprietary or corporate networks also span the globe, but are not open. These WANs (wide area networks) are protected from intruders by elaborate electronic means. The Internet is a collaborative and open network. Files are transmitted through a variety of routes that are not necessarily secure.

44. Encryption is a measure that is available to increase security of transmissions. Files are coded for transmission over the Internet. Commercial transactions involving credit cards have recently been undertaken over the Internet in the United States using encryption. Encryption may, however, not be legal in some jurisdictions.

2. Network coordination and management

45. National SIDS/NET nodes will need planning, management, promotion and communications. They will also need strong managers with leadership and communication skills and a good understanding of the technology and the ability to promote its use. These persons will need strong entrepreneurial talents.

46. A business plan will be needed. Local coordination, regional and global integration will be required. Travel and training will be an important component as well. Encouraging potential providers of information in SIDS to make their resources available through SIDS/NET will be necessary. SIDS/NET is not a network offering only foreign resources. It can only succeed if it satisfies local needs, only if it can enhance personal communications, and only if locally produced information is made more readily available as a result.

47. Coordinators at all levels, and particularly at the national level, will need to be change agents. They will need to enthuse institutions in the SIDS, do problem solving for them, and speed up the progress towards SIDS making profitable use of the network. They should never lose sight of human networking as the basic goal. In addition, they should do effective marketing and build a large user base in the form of subscribers. They should promote the learning of the technology of the SIDS/NET in SIDS and transfer of this knowledge for use in other sectors of the economy. They should have good business sense, ensuring that the subscription revenue is built up over a few years to enable SIDS/NET to continue operating when external assistance begins to decline.

3. Appropriate technologies

48. Appropriate technologies are those that a SIDS can adopt and/or adapt to their needs and circumstances and of which it can make beneficial use. A flexible and gradual approach is required to introduce telecommunications technologies that require highly trained professionals, large capital and recurrent investments and expensive in situ maintenance. There will be variations in capacity from country to country and region to region. This will influence the adoption of appropriate technologies and management practices. In many cases, a substantial effort at capacity building will be required and will take time to plan and deliver.

49. Near one end of the spectrum of options for using computer networks, there is electronic mail (e-mail). This requires a PC or other computer, a telephone line and a modem. Training is required for one to become a user of e-mail, but is minimal. All SIDS have the basis for this level of connectivity. With electronic mail, it is possible to establish a BBS and to create electronic conferences locally on a variety of topics of interest to users of the system. Many countries have developed their own BBSs to serve their needs. In some cases, local subscribers sustain these initiatives. Some have been developed with the help of outside funding, for example several networks of APC in Latin America were established this way. g/ At least one of these is linked to the Internet using a local leased line connection to the national academic and research network. In some countries, national agencies, such as those of the academic and research community, maintain Internet compatible research networks. This model for connecting to the Internet may be appropriate in some SIDS and would cut costs drastically. Several SIDS located in the Mediterranean, the South China Sea and the Persian Gulf are in this situation.

50. Near the other end of the spectrum of technical options comes full access to the Internet, usually involving a leased line obtained from the local telecommunications authority. This type of a connection will offer e-mail as well as access to remote computers and databases and other services.

51. The need for diversity in telecommunications resources should be acknowledged. Such diversity pits technologies against one another, promoting innovation, and driving costs down. It avoids SIDS being trapped into monopoly situations. It provides for SIDS to be up to date in the technologies on which they have to build their economic future.

4. Capacity-building

52. SIDS will have to become completely self-sufficient in the management and operations of SIDS/NET nodes. They will need management and technical training and support for this.

53. The basic e-mail functionality referred to as the entry level or type of service SIDS/NET offers is based on store and forward computer messaging systems using on the uucp and/or FidoNet protocols. The SIDS/NET programme will either help develop local skills from scratch or enhance the extent SIDS already use these technologies which are based on small computers. Eventually, computers running the UNIX operating system will be required for their power and versatility. Training will be required where the use of UNIX computers for full access and compatibility with Internet protocols such as Transmission Control Protocol/Internet Protocol (TCP/IP) is justified. Local universities with this expertise could offer UNIX training.

54. The nodes will also have to establish local user groups. A business plan justifying the investment and identifying users and their needs will be a first step in establishing the node and an instrument for setting benchmarks and for monitoring progress and evaluating performance.

55. SIDS/NET will have to demonstrate the value of computer mediated communications, and training through secondment for example, will be important. Showing what other organizations have done under similar circumstances will be necessary. Participation in conferences such as Inet, the annual conference of ISOC, will be critical to help the network fuse. Coordination at all levels, and especially at the global level will be needed for this.

56. Training in exploiting resources available using computer mediated communications will be needed.

57. TCDC will be encouraged, for building capacity and self-sufficiency and for exploring alternative networking scenarios involving computer mediated communications. Providers of computer network services that have the capacity, and that are in SIDS or in countries or regions close to SIDS, should be approached for training and technology where and as appropriate. Collaboration with the SIDS/TAP activity should be encouraged. Commercial and other telecommunications consortia should also be approached.

B. Who can join?

58. In order for SIDS/NET to be successful, it must not only be available to, but also used by all stakeholders in the development of SIDS. The qualification to be a subscriber should be willingness to contribute to the welfare of SIDS, bearing in mind that every participant should be a user as well as a provider of information.

59. It is essential that key stakeholders and decision makers in the Government, the private sector, NGOs, local and community groups, the research

and academic community, women's groups, educators and among media people be involved.

60. The funding in this programme is designed to benefit SIDS listed in the budget plan below. However, SIDS/NET will be accessible to all those interested in the development of SIDS, and especially in their sustainable development, through global electronic networks. If other small maritime countries wish to be involved directly with this programme, additional resources should be found for this purpose.

C. Benefits of SIDS/NET

61. SIDS/NET could make a significant contribution in many areas related to development. Some of these benefits accrue as a result of networking with the organizations indicated below. Research would reveal that many others could also contribute. SIDS/NET could contribute to the following areas:

1. Communications

(a) Encourage greater international communication in matters relating to development, and promote world-wide collaboration on matters of common interest. SIDS/NET will offer a bridge from every SIDS to practically every other nation on earth for information exchange;

(b) Support communication on development related matters between SIDS and their ambassadors and missions abroad;

(c) Improve communication between expatriated nationals of SIDS studying abroad and their home countries;

(d) Reduce the sense of isolation of SIDS nationals returning after education abroad, allowing them to sustain productive working relationships they have established;

(e) Promote development oriented communication between the media on SIDS and their collaborators abroad and generally help media people in SIDS obtain relevant development oriented information using global computer networks. Several information services providers and newswire services, such as the Inter Press Services (IPS), provide access to their news feeds using computer networks;

(f) SIDS/NET can provide a cost-effective regional networking infrastructure which will make it easy for users in each region to effectively access regional networks and at the same time have access to other networks in the world.

2. Technical Cooperation among Developing Countries

Enhance the effectiveness of SIDS/TAP. An important goal of SIDS/NET is to enable SIDS to achieve the objectives of the Barbados Programme of Action and specifically a heightened exchange of technical cooperation between SIDS. SIDS/TAP is being designed as a mechanism to operationalize the Programme of Action and its effectiveness will be greatly facilitated by SIDS/NET.

3. Trade and tourism

(a) Improve market efficiency through access to information about commodity prices and availability, product standards, consumer standards, non-tariff barriers and the identification of new market opportunities. Some of this information is available from commercial databases and information service providers;

(b) Promote access to tourism information about SIDS and help them access relevant resources on the tourism industry, including those of the World Tourism Organization (WTO) and others, especially on matters related to ecotourism and sustainable tourism development. The conferences of APC are relevant in this matter.

4. Research

(a) Promote better applications of the results of research;

(b) Provide a cost-effective solution to associations of professionals, researchers and scientists, as well as representatives of regional organizations and others who need connectivity. For example, representatives of the international agricultural research centres (IARCs) of the Consultative Group for International Agricultural Research (CGIAR), who operate in all SIDS regions, have been involved with other international organizations, including those of the United Nations, in over 100 agricultural research networks. SIDS/NET will promote more frequent and better communication between IARCs and SIDS.

5. Education

Support educational networking, particularly promoting cooperation between universities of the world and educational institutions in island States which have no tertiary education. Some of this information is available from governmental and educational authorities with expertise in this area and from the United Nations Educational, Scientific and Cultural Organization (UNESCO).

6. Participation in government

Promote greater participation of remotely located communities in government and decision-making and in the dissemination and use of information within each SIDS.

7. Information management

(a) Offer improved and timely access to the staff, databases and information and other services in Governments and other organizations, such as libraries, in SIDS, at the local and regional levels, and equivalent access to relevant global resources of the United Nations and other development organizations, including, for example, the World Bank and other donors around the world. Access to the publicly available information of NGOs, corporations and other stakeholders for sustainable development would also be possible;

(b) Open up access to more than 20,000 computers around the world offering information. This includes access to the computerized directories of over 600 libraries including, for example, the Library of Congress of the United States and the libraries of major universities and research centres around the world, as well as those available in national and regional organizations in SIDS;

(c) Encourage the community of librarians and information management professionals in SIDS and elsewhere to create and support electronic tools, such as union lists of serials, indexes to specialized collections, inventories of data resources, current contents of regional and international journals and other indexes and meta-information tools, including helping to develop Internet "gopher" for SIDS; h/

(d) Help in producing and sharing directories of institutions and experts on the SIDS.

8. Environmental and disaster management

(a) Support greater dissemination of timely information about ships and travellers on issues such as:

(i) Poaching of fishery and other marine resources;

(ii) Carrying out illegal activities such as smuggling and drug running;

(iii) Threatening the environment through possible oil spills or dumping of waste;

Some of this information is available from national and regional organizations in SIDS, from other nations, from the International Maritime Organization (IMO) and from the specialized agencies of the United Nations;

(b) Promote better access to oceanographic and meteorological information, some of which are available from the scientific community in SIDS and beyond,

through the Internet, the World Meteorological Organization (WMO), UNESCO, and other nations, including, for example, the United States, that make publicly available the considerable resources of their national weather services and space agencies;

(c) Promote the application of environmentally sound and appropriate technologies by linking SIDS to existing providers of information and resources in this area. A major resource is the United Nations Environment Programme (UNEP), and the various activities that are part of Earthwatch: Infoterra, the Global Environment Monitoring System (GEMS), the Global Resources Information Database (GRID), as well as other relevant activities of UNEP. SIDS regional and national organizations will have much to share, being in many cases associated with these initiatives;

(d) Assist in early warning of natural disasters, prevention, management and mitigation efforts;

(e) Assist in ocean and earth observation in relation to climate change and sealevel rise, and state of the environment reporting in general. The CC: INFO database of the Climate Change Secretariat, the World Health Organization (WHO), UNESCO and UNEP all have information to contribute. Several national organizations are also connected to the Internet, including the United States Environmental Protection Agency (EPA), and can make an important contribution. SIDS and regional organizations of SIDS will also have information to exchange;

(f) Assist in environmental monitoring in general, especially monitoring of pollution and waste management, and in monitoring and providing information about the coastal and marine environments. The various organizations of the United Nations and others mentioned here have information to contribute. EPA is a major player. International and other NGOs are also important players connected to the Internet;

(g) Assist in better land use management and planning, through sharing of information. The Food and Agriculture Organization of the United Nations (FAO) and others have information to contribute here. Like an increasing number of international organizations, FAO makes information publicly accessible through the Internet. National and regional SIDS organizations will also have much to contribute;

(h) Promote the use of new and renewable sources of energy and exchange experiences of using and experimenting with these. Several key electronic conferences available through the APC network are sources of news and technical information on these issues. International NGOs working in this field are also connected to the Internet. National and regional organizations will also have much to contribute;

(i) Assist in the conservation and management of biodiversity resources. The World Conservation Monitoring Centre (WCMC) and other organizations such as the World Conservation Union (IUCN), the World Wide Fund for Nature (WWF) and UNEP are also involved in this work along with several others in the research and academic community and the NGO community. Most are connected to the Internet. WCMC has important resources, many computerized.

D. Principles of implementation

(a) The implementation and operation of SIDS/NET should be based on local needs and circumstances and the principles of Agenda 21; a/

(b) Appropriate technologies and management practices will be required and open information exchange will be the goal along with participation of all stakeholders;

(c) A mid-term review will take place after 24 to 30 months and ongoing monitoring and evaluation will be required. Adjustments to the balance of the work programme will probably be needed;

(d) A flexible approach must be adopted. Local needs and circumstances vary to such an extent, not only within, but especially between countries and regions. Some SIDS have little or no expertise in using these technologies. Others are well on their way to becoming established. Among SIDS, Singapore has over 4,000 computers addressable through the Internet. Cyprus has 38 and Fiji has 5. The United States has over 2 million. There are no other SIDS listed in the most recent compilation of the number of computer hosts on the Internet, although many SIDS can be reached using electronic mail (ISOC, press release, August 1994);

(e) SIDS/NET management should be entrepreneurial in orientation; marketing and communications will be important parts of its responsibility;

(f) Cost recovery and eventual self-sustainability, should be built into SIDS/NET plans and activities. Eventually, operations will have to be sustained through subscription, which is the preferred choice because it demonstrates the need felt and makes the network accountable to the users. If subscriptions are insufficient, voluntary contributions will be necessary;

(g) For reasons of geography, regional organizations will play a major role in SIDS/NET. They will make information on their databases accessible by e-mail and on-line services;

(h) SIDS/NET should have a flexible and decentralized approach, based on a collegial management style and regional cooperation;

(i) SIDS/NET management style should promote a participatory form of operation;

(j) SIDS/NET should avoid duplication and build on existing networks, information resources and infrastructure, seeking where appropriate to enhance these, instead of creating new structures. For example, SIDS/NET could be combined with SDNP, a networking activity funded by UNDP and already established in 12 developing countries with an additional 12 developing countries expected to be networking by the end of 1994 or in early 1995. In the South Pacific, SDNP and SIDS/NET nodes could be integrated. Where possible, SIDS/NET could help extend APC networking. When it is appropriate, SIDS/NET will promote new networks or nodes;

(k) SIDS/NET should not be involved in primary data capture or analysis, but could have a role to play in facilitating information exchange and communication by helping to link centres or activities involved in primary data capture related to Earth observation and management (for example, those activities associated with Global Earth Observation Systems (GEOS) or the Global Environment Monitoring System (GEMS) and the Global Resources Information Database (GRID) activities of UNEP or for state of the environment reporting in general). National and regional SIDS/NET nodes should be aware of these resources or data capture and processing facilities and provide referrals to them;

(l) SIDS/NET will have rather limited data-carrying capacity for exchanging LANDSAT or other high resolution imagery in any significant volume. One would use other communication links for handling any such large and specialized demand for data communication;

(m) SIDS/NET should encourage the development and sharing of indigenous knowledge resources and expertise;

(n) SIDS/NET should be implemented gradually and on the basis of need.

E. Principles of financing

62. The recommendations for financing this project are based on the following principles:

(a) The funding must sustain the project at a usable level when external funding is no longer available. There is no point in funding a project at a level which cannot be maintained by SIDS;

(b) Funding should also take into consideration the disparities existing between SIDS and SIDS regions;

(c) SIDS/NET has to develop a subscriber base and eventually collect subscriber fees to sustain the operation of the network;

(d) Cost-sharing should be phased in as early as possible, so that by the end of five years, SIDS would be contributing a big share of the cost of operation;

(e) The financing need not support the development and maintenance of databases but should support the creation of directories to help users learn what information is available and how to obtain it;

(f) Wherever possible SIDS should extend concessional tariffs for leased lines;

(g) UNDP offices and other regional and international organizations should be encouraged to use SIDS/NET in order to provide it with demanding subscribers who will expect early and reliable operation;

(h) UNDP and other organizations of the United Nations, as well as other multilateral agencies and donors, should be encouraged to subscribe to SIDS/NET.

F. Opportunity costs

63. Opportunity costs can be estimated in general terms: lack of information for planning; lack of information about competitors; lost opportunities to penetrate markets because of ignorance of standards and other non-tariff barriers; inability to take full advantage of conventions, treaties and other negotiations or instruments because of a lack of intelligence and/or ability to influence the process by which these conventions and agreements are drawn up; lost job opportunities (more and more positions are advertised on the Internet); lost opportunities to tender for contracts (as one example, the World Bank seeks tenders for several million US dollars' worth of contracted out work a year. It is on the Internet and being able to communicate easily would have a competitive advantage). There are also many opportunities in the private sector; and the cost of keeping large staff in expensive trade missions overseas.

64. In short, lost opportunities amount to agreeing to deal at a comparative disadvantage in regional and increasingly global marketplaces, clearly an untenable situation. While some of the information about these opportunities is available in SIDS, it may not be widely shared beyond the Government or the private sector. Placing this information in the public domain and encouraging access through SIDS/NET could motivate greater participation and use of information for economic as well as sustainable human development.

V. SIDS/NET MANAGEMENT

65. National and regional nodes are to be established in organizations that will facilitate access to all stakeholders. Local users should be encouraged to provide input and to help manage the local SIDS/NET through steering committees made up of representatives of key stakeholders for sustainable development and of the users themselves. Regional nodes should help national nodes and other regional nodes, as and when required.

A. National level

66. The management model used and tested under SDNP should be adapted to the SIDS/NET programme at the national level. In each participating country, SIDS/NET will require a national node. The SIDS/NET country or national node will be responsible for adapting, modifying and implementing a programme of work and budget according to local needs and circumstances and based on the overall SIDS/NET programme. With the help of the regional node and the global coordination centre, each national node will be responsible for capacity building. The regional node, the global coordination centre and even other national nodes will help in any way possible.

67. The country coordinator will be responsible for the day to day operation of the SIDS/NET national node and for executing the programme of work. He/she will

liaise closely with a steering committee made up of key stakeholders to which he/she will report regularly and which will guide the coordinator.

68. The coordinator of the national node should have strong management and communications skills, as well as the standing to negotiate with senior individuals in government, the private sector, and at the local and community level, along with members of the donor community. He/she should have leadership and business skills and be a motivator. He/she should effectively publicize and market the network to all potential users and contribute to the development of a user base to eventually sustain the operation of the network. He/she need not be an engineer or computer professional but should have computer related skills.

69. A steering committee will be created. A chair will be selected. The steering committee will select the Coordinator of the SIDS/NET national node. It will guide the Coordinator and staff of the national node, operate in an open and collegial fashion, and reflect the interests of all users. The basic principle of open adhesion to SIDS/NET will also be followed when considering the make-up of the steering committee. A user group will be open to all SIDS/NET users and will be a forum for meeting and human networking. Concerns of the user groups will be communicated to the coordinator and to the steering committee.

70. The location of country nodes will vary from country to country depending on local conditions. Where a country has a strong and active constituency of NGOs, the location could be an independent site agreeable to all. The willingness of potential node locations to share the set-up and operating cost of running the node (in kind or otherwise) will be an important consideration in determining the eventual location of the node itself. The SIDS/NET coordinator and steering committee will decide on the country node location in close consultation with key stakeholders.

71. The principle of subscription-based services is essential if the network is to ever become self-sustaining. Every SIDS participating in SIDS/NET should agree to the network being a subscription-based activity. As an idea, subscriptions could start in year two of the programme and be as low as US$ 30 per month, with a limit to the volume of data that can be transmitted. Higher volumes of data transmission could be available for a higher fee.

B. Regional level

72. The regional centres will be managed by a regional coordinator chosen by the SIDS members in the region. A regional steering committee, with representation from the national SIDS in the region, will support and advise the regional centres and will help develop a regional viewpoint for SIDS/NET.

73. The regional centres will:

(a) Help promote and coordinate interregional and intraregional linkages and collaboration;

(b) Deal with issues of regional concern, such as regional connectivity and helping assemble information available locally and regionally to be used in the production of regional directories;

(c) Have a role to play in selling the SIDS/NET concept and helping national SIDS/NET nodes to become established;

(d) Help marshall resources, motivate and help train staff and users, identify and help users in the region gain access to relevant information resources, monitor use and help trouble-shoot and solve problems;

(e) Alert regional policy-making bodies to critical networking issues which impact economic and telecommunications development and advise on solutions;

(f) Generally facilitate the operation of national nodes by sharing information about priorities with the national nodes and the global coordination unit.

74. The Regional Centre could rent or occupy an office on its own, or it could be hosted by an organization agreeable to the principles of SIDS/NET operation, supportive of its objectives and which could effectively contribute to its functioning. The choice will be influenced by the nature and extent of support, including eventual financing. An effort should be made to operate the regional node at one of the national SIDS/NET node locations.

75. Where possible, as in the case of the South Pacific, the regional node for SIDS/NET should be located in conjunction with the SDNP secretariat. In the South Pacific, SDNP is currently housed in the Suva office of the South Pacific Commission (SPC). This has obvious and significant cost advantages. In this case, this could effectively jumpstart SIDS/NET by building on existing e-mail networks in three South Pacific island States (Fiji, Vanuatu and Western Samoa). SIDS/NET will "plug into" an existing network with knowledge of and access to a variety of information resources: directories, databases, and information providers throughout the region. SIDS/NET will also have a fully equipped office, with a Sun Sparc workstation and other computers, and access to the PEACESAT satellite communications facility providing full access to the Internet along with voice communications in over 30 locations throughout the South Pacific. Association with APC networking initiatives should be encouraged as well.

76. Under conditions of full access connectivity, SIDS/NET will need telecommunications service providers in each region. They could be contractors, with excellent communication infrastructure, international links, and round-the-clock network monitoring capabilities, taking responsibility to keep the links running to each SIDS without interruption. Contractors could be selected on the basis of competitive bidding for services.

C. Global coordination

77. Global coordination will be required to help make the SIDS/NET programme a reality. A small secretariat, the International Coordination Centre, set in a neutral location, or a host organization with a global perspective, excellent connectivity and the ability to support the initiative administratively, with expertise, funding and otherwise, will be needed.

78. A steering committee or board of trustees, made up of SIDS representatives and of donors and similar to the steering committees operating at the national and regional levels, will be necessary. SIDS will be represented possibly by AOSIS, and/or other representatives.

79. A SIDS/NET Advisory Committee, composed of participants with relevant managerial and/or technical expertise, could meet initially at least twice a year, and provide advice on an ongoing basis using computer networking or other means.

80. A global coordinator, supported by one or two staff, will manage the secretariat which will have responsibility for the following:

(a) To explain, advocate, market and represent the SIDS/NET programme to a variety of audiences at the global level and in SIDS;

(b) For ongoing fund raising and communicating with the donor community. The coordinator, with the help and advice of the steering committee, will help develop a concerted approach to fund raising. This will be an important activity, given that voluntary contributions may be needed to help sustain SIDS/NET, in some cases, beyond the five-year period proposed here;

(c) Assisting the coordination of SIDS/NET initiatives at the global level. Lines of communication will be established with all SIDS/NET nodes, keeping SIDS/NET nodes in the regions and in the country informed. Information will be collected and shared with SIDS/NET nodes. The coordinator will also maintain regular communications with SIDS representatives, AOSIS and with others;

(d) Providing a neutral meeting ground for SIDS representatives to convene and discuss SIDS/NET;

(e) To monitor developments relevant to the SIDS/NET programme;

(f) To help SIDS/NET users develop an understanding of the nature and structure of the universe of information relevant to the Network;

(g) To help foster international and intraregional integration of SIDS and to look for other opportunities or partners for SIDS/NET;

(h) To allocate funds and organize training if necessary to "train the trainers", and otherwise contribute to capacity building;

(i) To help regional and national centres provide a global clearinghouse function;

(j) To provide some store and forward connectivity for uucp and FidoNet dial up connections when and as required;

(k) To help develop global and interregional directories;

(l) To provide expert advice and support on technical and managerial matters;

(m) To organize regular reviews and evaluations of performance and accomplishments

81. The location of the International Coordination Centre will be influenced by the following considerations:

(a) The International Coordinating Centre must be entrepreneurial in orientation, more than technical, and be much more than a centre of routine administration;

(b) It would be valuable to consider the creation of a not-for-profit association, a "SIDS/NET Society" or company, at the end of three years of the programme, to eventually and gradually take over the responsibilities of international coordination.

Host agency: options

82. A United Nations development organization is a logical choice for coordinating the global SIDS/NET effort. UNDP is dedicated to development and capacity-building and to the implementation of the recommendations of the Barbados Programme of Action b/ as well as Agenda 21. a/ UNDP has a global network of offices in many countries of the developing world.

83. UNDP has also launched SDNP, which in many ways resembles SIDS/NET. SIDS could approach UNDP to provide material and other support to the SIDS/NET coordination office. Associating SIDS/NET with SDNP at UNDP would also project the SIDS/NET effort into the operational phase without any delay. SIDS/NET and SDNP share many assumptions, objectives, principles and a common methodology. Once the SIDS/NET Society gets off the ground, hopefully after an initial three- to five-year period, the offices should move out of UNDP. Locating the International Coordination Centre at UNDP headquarters in New York would take advantage of the presence of representatives of all SIDS and of AOSIS when their input is most needed, when SIDS/NET is being established. Consultations during the feasibility study demonstrated this.

84. The United Nations has plans for global networking that may lead to collaboration and resource sharing with SIDS. In principle, the United Nations has the status of a Posts Telephone and Telecommunications authority (PTT). This conveys the privilege of much reduced leased line costs.

VI. OPTIONS

85. A high-end option would be full access immediately for all SIDS. An intermediate option is presented here to show what is possible and how much it would cost.

86. It has been assumed that each SIDS and region will have similar costs for using e-mail and especially for gaining full access to global computer networks such as the Internet. It is also assumed that each SIDS will have the same interest to proceed and that full access is possible and desirable in each country. For budgeting purposes, it is also assumed that the SIDS/NET programme will start up at the same time and will be implemented synchronously around the world.

87. The reality of local needs and circumstances and the breadth of the proposed endeavour may affect cost projections. Actual costs and implementation plans should depend on a study of the feasibility and of the options open. A staggered approach has been foreseen. Existing capacity will be important as a focal point of expertise and for training. For example, if the South Pacific SIDS/NET can use the PEACESAT satellite funded by the United States, then leased line costs would decrease dramatically. If SIDS/NET is developed in collaboration with a project to establish a regional satellite news network in the Caribbean in association with the Caribbean News Agency (CANA), then other savings and benefits may accrue. Travel costs will vary greatly within countries and regions.

88. The option documented here is the full menu from which choices more acceptable to local needs and circumstances and budgets can be made. Interest and willingness to participate and contribute, geography and population and existing capacity are some of the criteria which will influence the choice of a suitable solution.

VII. BUDGET PLAN

89. Since neither cash flow nor the resources envisaged in this plan could support the implementation of full access to the Internet for all 35 SIDS in the first year, a phased approach has been recommended.

90. The information gathered from the site visits and other sources, including the personal knowledge of the consultants, was used to determine an appropriate type of service for each island during the five-year project. The current state of connectivity, volume of traffic, population, presence or absence of regional organizations or technical assistance agency representation were among factors taken into account.

91. The phasing recommended for each of the 35 SIDS is shown in table 1. The years for which e-mail has been recommended are indicated by "e". FA represents full access.

92. It is emphasized that these recommendations are based on the best available information at this time. If additional information becomes available or the

situation changes, there must be a mechanism for changing the phasing. For example, if a SIDS that put in e-mail in year one and was scheduled to have full access in year three has very few e-mail users at the end of year two, it may be advisable to postpone the implementation of full access to a later date. Alternatively a very rapid increase in e-mail traffic could justify earlier full access. In short, there is need for flexibility in project development at the national level.

93. Average costs were estimated for the following categories:

(a) Staff. It was assumed that the average annual cost for all staff at the national level would total US$ 25,000 for the manager and support staff for an e-mail service. An estimate of US$ 40,000 was used for the manager, one Professional and support staff for full access. At the regional level, there should be a regional coordinator, two Professionals and one support staff member at salaries commensurate with those in regional organizations. At the international level, there should be two Professionals, one support staff member and provision for consultants;

(b) Office Costs (OFC). An average annual amount of US$ 15,000 has been provided for office rental, equipment, supplies, telephone, fax, etc;

(c) Training (TRA). An average annual amount of US$ 8,000 has been provided for training at the national level to help cover the cost of materials and some travel associated with local training. It is assumed that most users will pay for their own travel to the node for user training and that the original budget will cover the cost of training of staff from the national nodes. At each of the regional centres an amount of US$ 15,000 has been provided for training workshops for national staff and users from regional organizations;

(d) Marketing (MRK). Sensitization and promotion has to be done at an early stage, and in-depth marketing as soon as the systems are on stream and there is a service to be marketed. Users and potential users must know exactly what the service will provide with respect to information, nationally, regionally and internationally. The benefits of the service, in relation to the subscription fee, should be emphasized;

The US$ 5,000 provided at the national level will be used each year for advertising, printing brochures and promotional material aimed at potential local users, giving talks and demonstrations to local groups and organizations and any other ways to promote the use of SIDS/NET. Local marketing efforts should be closely coordinated with those at the regional centre, which has an annual budget of US$ 10,000 per year. A further US$ 10,000 has been provided for marketing at the international level;

(e) Travel (TRV). Only US$ 2,000 per year has been provided on average for local travel because travel to regional meetings for national staff has been provided in the regional budget of US$ 20,000. It has been assumed that travel costs in SIDS that are single small islands will be minimal. The international budget has been estimated at US$ 125,000 to bring regional staff and others to international meetings;

(f) Equipment (EQP). US$ 25,000 has been allocated for e-mail service and US$ 45,000 to provide full access to the Internet. US$ 20,000 has been provided to upgrade from e-mail to full access. It is noted that this does not include any equipment for satellite communication, such as transmitters or dishes;

(g) Communications costs (COM). The communications costs provided for e-mail are US$ 5,000 in year one, US$ 10,000 in year two, and US$ 15,000 in year three of the programme in order to keep pace with increasing traffic. In years four and five, full access will normally begin. The average cost of a leased line for full access to the Internet is assumed to be US$ 60,000 per year. If the PEACESAT option is selected for the Pacific Region, this money can be used to purchase the ground stations and provide the staffing and maintenance required. If other satellite options are used, such as using part of the transponder capacity that is likely to be leased by the United Nations family, the money will be used to cover those costs. The overall costs should be much less with such options.

94. It is noted that the amounts in each category represent estimated averages and adjustments to individual budgets will have to be made to reflect individual country circumstances.

95. The tables and graphs do not contain any provision for inflation. If an annual inflation rate of 5 per cent is assumed for all categories except equipment and communications where a good argument can be made that the costs will not increase significantly and may even decrease, the total cost and donor support increase to US$ 30.9 million and US$ 19.7 million respectively.

96. The total cost for each category at the national, regional and international levels are shown in table 2. The funding from the SIDS/NET programme is given in the column labelled donor. The last column shows the total of SIDS contributions.

97. Apart from six SIDS i/ which were considered able to supply most of their own financing, the programme provides full support in the first year and for operating costs, training, marketing, travel and equipment for three more years. The support for staff drops to 50 per cent in the fourth year. The support for communications costs drops to 75 per cent in year two, 50 per cent in year three and 25 per cent in year four. The purpose of this reduction in the level of support is to encourage SIDS to assume increasing responsibility for the costs during the programme in anticipation of the eventual termination of outside support.

98. Since SIDS would initiate activities at different times and different levels, the total costs and support costs will vary. The total cost for each SIDS during the four years of support is shown in table 1. The percentage of the cost covered by the support is shown in the last column. It was felt that the range was acceptable.

99. It is strongly recommended that the national nodes of SIDS/NET charge each of their users a subscription fee. The amount of the subscription should be determined by the local steering committee. Subscription income is essential to ensure the sustainability of SIDS/NET. To illustrate the significance of this

revenue it is assumed that in the last year of the programme, each of the 35 islands will have, on average, 120 e-mail subscribers paying US$ 30 per month and 10 subscribers, probably mainly from institutions, paying US$ 200 per month for interactive access over leased lines. The total revenue would increase to 35 x (120 x 30 + 10 x 200) = US$ 196,000 per month or nearly US$ 2.4 million in year five, for a total of US$ 5.7 million over the five-year term of the programme. This would represent about 25 per cent of the total cost of the programme over five years, starting from zero income in the first year, 11.6 per cent in year two, 19.2 per cent in year three, 27.2 per cent in year four and 38.4 per cent of the total cost of running SIDS/NET in year five.

100. The total of all costs at the national level, together with the donor contribution to support SIDS directly, is shown in figure 1 along with an estimate of potential revenues, shown as income, from subscriptions. Table 2 shows the total contribution of SIDS.

101. However, even after five years, there exists a gap which is an indication that continued donor support will be necessary in some SIDS until self-sufficiency can be achieved. The experience of SDNP to date confirms this. It is likely that a provision will be necessary to secure funding on an ongoing basis for some SIDS. This will be a role for the SIDS/NET Society to pursue.

VIII. CONCLUSIONS AND RECOMMENDATIONS

102. The study team has reached the following conclusions:

(a) There is very real and enthusiastic support for the idea of SIDS/NET, both in the small-island developing States and in many regional and international organizations. Both wish to make information more readily accessible to SIDS and to open more communication channels between SIDS;

(b) There is a great need to improve understanding of the importance of informed decision-making. SIDS/NET can help bridge the information gap to help realize the need for informed decision-making locally, regionally and otherwise;

(c) There is also a need to improve the understanding of significant new information resources and of the technological developments available to use them in SIDS;

(d) There exist significant information resources and opportunities locally, regionally and at the global level of which SIDS cannot take advantage. These information gaps contribute to their isolation. SIDS/NET is needed to bridge this gap;

(e) A phased and flexible approach to the implementation of SIDS/NET is necessary;

(f) It is essential to introduce subscription fees at the earliest stage to ensure the sustainability of SIDS/NET;

(g) Management should be as decentralized and as participatory as possible;

(h) There needs to be coordination and management at the regional and international levels;

(i) The regional organizations have an important role to play;

(j) Appropriate information technologies are now accessible. The time for action is now. The lost opportunity cost of not acting immediately cannot be overestimated.

103. The study team makes the following recommendations:

(a) The SIDS/NET programme should begin as soon as possible and no later than 1 July 1995;

(b) SIDS should take the initial steps to approach the donor community as soon as possible;

(c) SIDS should begin a programme to increase understanding and awareness of SIDS/NET;

(d) Feasibility studies need to be undertaken in SIDS to determine a solution specific to their local needs and circumstances.

Table 1

PHASING, FOUR-YEAR COSTS AND DONOR SUPPORT BY COUNTRY

	95-96	96-97	97-98	98-99	99-00	TOT (US $000)	Donor	%
ATLANTIC								
Cape Verde		e	e	FA	FA	440	341	78
Sao Tome and Principe	e	e	FA	FA	FA	430	333	77
CARIBBEAN								
Antigua and Barbuda		e	e	FA	FA	440	341	78
Barbados	FA	FA	FA	FA	FA	565	455	81
Bahamas	C	C	C	C	C	565	80	14
Cuba	FA	FA	FA	FA	FA	565	455	81
Dominica		e	e	e	FA	395	311	79
Dominican Republic		e	e	FA	FA	440	341	78
Grenada		e	e	e	FA	395	311	79
Haiti		e	e	e	FA	395	311	79
Jamaica	FA	FA	FA	FA	FA	565	455	81
St. Kitts and Nevis		e	e	FA	FA	440	341	78
St. Vincent and the Grenadines		e	e	FA	FA	440	341	78
Trinidad and Tobago	FA	FA	FA	FA	FA	565	455	81
Saint Lucia	FA	FA	FA	FA	FA	565	455	81
PACIFIC								
Cook Islands		e	e	FA	FA	440	341	78
Fed. States of Micronesia		e	e	FA	FA	440	341	78
Fiji	FA	FA	FA	FA	FA	565	455	81
Kiribati		e	e	FA	FA	440	341	78
Marshall Islands	e	e	FA	FA	FA	430	333	77
Nauru	C	C	C	C	C	565	80	14
Papua New Guinea	e	e	FA	FA	FA	430	333	77
Samoa	FA	FA	FA	FA	FA	565	455	81
Solomon Islands	FA	FA	FA	FA	FA	565	455	81
Tonga	e	e	e	FA	FA	370	295	80
Tuvalu		e	e	e	FA	395	311	79
Vanuatu	FA	FA	FA	FA	FA	565	455	81
INDIAN OCEAN								
Bahrain	C	C	C	C	C	565	80	14
Comoros		e	e	e	FA	395	311	79
Maldives	e	e	e	FA	FA	370	295	80
Mauritius	FA	FA	FA	FA	FA	565	455	81
Seychelles	e	e	FA	FA	FA	430	333	77
MEDITERRANEAN								
Cyprus	C	C	C	C	C	565	80	14
Malta	C	C	C	C	C	565	80	14
SOUTH CHINA SEA								
Singapore	C	C	C	C	C	565	80	14

Table 2

TOTAL COSTS BY CATEGORY

(Thousands of United States dollars)

	STAFF	OFC	TRA	MRK	TRV	EQP	COM	TOTAL	DONOR
National	5 805	2 430	1 296	810	324	1 575	7 615	19 855	11 236
Regional	3 750	225	225	150	300	150	900	5 700	4 035
International	2 085	200	0	50	475	50	50	2 910	2 910
Total	11 640	2 855	1 521	1 010	1 099	1 775	8 565	28 465	18 181

OFC: Office costs

TRA: Training

MRK: Marketing

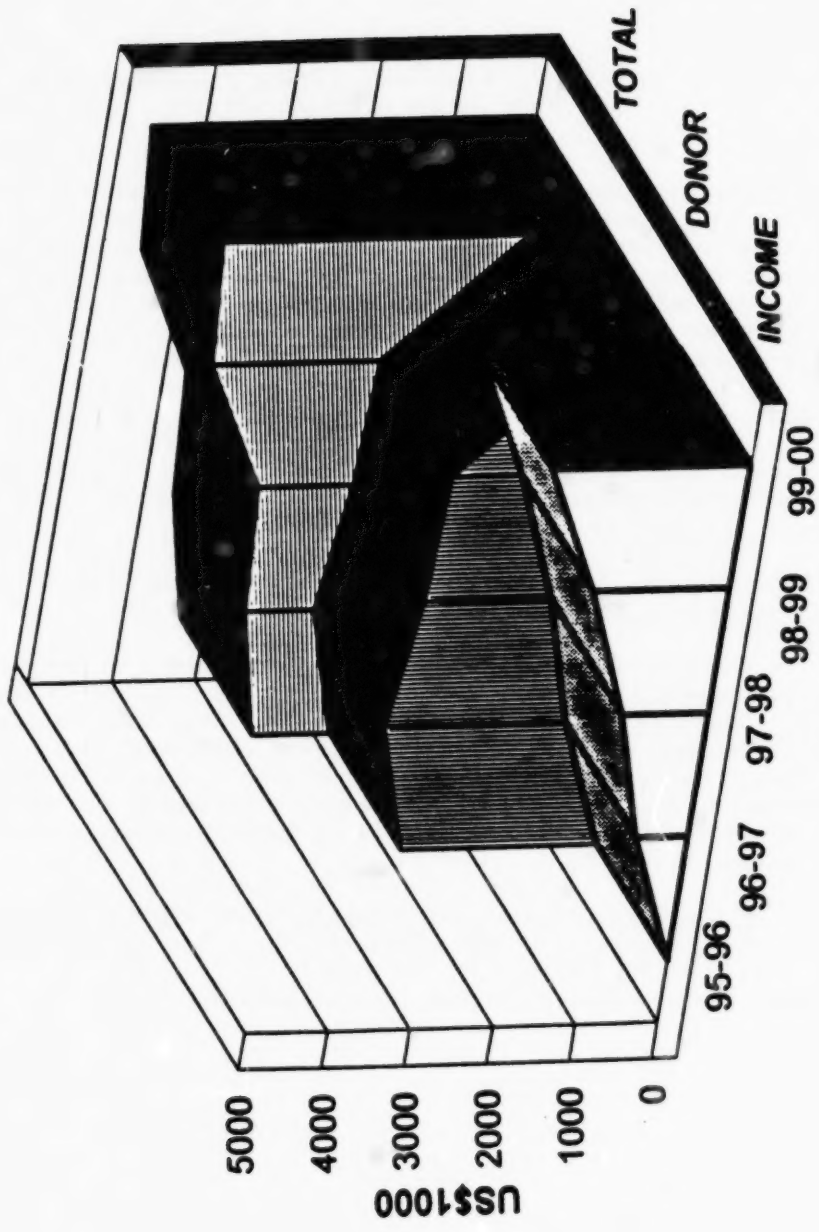
TRV: Travel

EQP: Equipment

COM: Communications costs

FIGURE 1

NATIONAL COSTS AND REVENUES



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Notes

a/ A/CONF.151/26/Rev.1, vol. I and vol. I/Corr.1, resolution 1, annex II.

b/ A/CONF.167/9, resolution 1, annex II.

c/ Some of the relevant regional organizations, not including those of the United Nations, are: the Indian Ocean Commission; the Association of South-East Asian Nations (ASEAN); the South Asian Association for Regional Cooperation (SAARC) Council; the South Pacific Forum and related organizations: the South Pacific Regional Environment Programme (SPREP); the Forum Fisheries Agency (FFA); the South Pacific Commission (SPC); the Caribbean Community (CARICOM); the Organization of Eastern Caribbean States (OECS).

d/ CD-ROM: compact disk - read only memory.

e/ Electronic conferences are also known as: forums (CompuServe), newsgroups (UseNet news available via the Internet), conferences (APC) and echoes (FidoNet).

f/ See International Institute for Sustainable Development, 1992. Sourcebook on Sustainable Development, Winnipeg: IISD, 134 pp.

g/ Some of the networks funded externally on the basis of the APC model include: Alternex (Brazil in 1989), Nicarao (Nicaragua), Huracan (Costa Rica), Boinet (Bolivia), Ecuanex (Ecuador), Ceniai (Cuba) and RCP (Peru in 1991). Each was based on a microcomputer using UNIX interactive, connected to the X.25 for local connections, a multi-serial port and many modems. A local leased line to a national Internet service provider, in the case of Alternex, the Brazilian research network, provided interactive Internet access (Personal communication. E. Puliatti, August, 1994).

h/ Gopher is a menu-based system for exploring Internet resources and is most useful when users have full access connectivity.

i/ Bahamas, Nauru, Bahrain, Cyprus, Malta and Singapore.